UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,425	09/17/2003	Martin R. Prince	1676.008US1	3209

21186   7590   12/21/2007
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EXAMINER
BITAR, NANCY

ART UNIT	PAPER NUMBER
2624	

MAIL DATE	DELIVERY MODE
12/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/664,425	PRINCE ET AL.
	Examiner	Art Unit	
	Nancy Bitar	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after t he mailing date of this communication, even if timely filed, may re duce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 September 2007*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-14,16,17,19-21,32,34-36,38 and 39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-14,16,17,19-21,32,34-36,38 and 39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 September 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All   b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01/16/2004*.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   Applicant argument has been received on 09/18/2007.

2.   Applicant elected Group III claims 1-21 and 31-39 and cancelled claims

22-30 and 40-52.Claims 5,15,18,33, and 37 are cancelled.

3.   Claims 1-4,6-14,16-17,19-21,31-32,34-36,38-39 are pending

Examiner Notes

Examiner cites particular columns and line numbers in the references as applied

to the claims below for the convenience of the applicant. Although the specified

citations are representative of the teachings in the art and are applied to the

specific limitations within the individual claim, other passages and figures may

apply as well. It is respectfully requested that, in preparing responses, the

applicant fully consider the references in entirety as potentially teaching all or

part of the claimed invention, as well as the context of the passage as taught by

the prior art or disclosed by the examiner

Drawings

4.   Figure 1, 2, and 3 are objected since the drawings are not of sufficient

quality to permit examination. Accordingly, replacement drawing sheets in

compliance with 37 CFR 1.121(d) are required in reply to this Office action. The

replacement sheet(s) should be labeled "Replacement Sheet" in the page header

(as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures.

If the changes are not accepted by the examiner, the applicant will be notified

and informed of any required corrective action in the next Office action.

Applicant is given a TWO MONTH time period to submit new drawings in

compliance with 37 CFR 1.81. Extensions of time may be obtained under the

provisions of 37 CFR 1.136(a). Failure to timely submit replacement drawing

sheets will result in ABANDONMENT of the application.

Claim Rejections - 35 USC § 102

5.   The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

6.   Claims 1-4,6-14,16-17,19-21,31-32,34-36,38-39 are rejected under 35

U.S.C. 102(a) as being unpatentable by Yoo et al (Post processing Techniques

for Time resolved Contrast-enhanced MR Angiography, January 7,2002) .

As to claim 1, Yoo et al teaches a method comprising: receiving a time

sequence of magnetic resonance images for a region, each image having a

plurality of pixels and wherein a contrast agent is introduced into the region at an

introduction time occurring during the time sequence (N=the total number of

images , Material and Methods, Postprocessing technique part);

selecting a first subset of at least one image from the time sequence of magnetic

resonance images, each image of the first subset corresponding to a time prior to

the introduction time; selecting a second subset of at least two images from the

time sequence of magnetic resonance images, each image of the second subset

corresponding to a time subsequent to the introduction time (mask images were

obtained before administration of the contrast material and prior to the arrival in

the arterial phase at the trifurcation. Material and Method part , Imaging,

paragraph 2);calculating a mask image (mask image set (M)) as a function of

corresponding pixels of each image of the first subset (mask images were

obtained before administration of the contrast material and prior to the arrival in

the arterial phase at the trifurcation, Material and Method part, 2nd paragraph);

calculating an arterial image(arterial phase image set (A)) as a function of

corresponding pixels of each image of the second subset; and generating a

composite image (generate a linearly filtered image) as a function of a difference

between each pixel of the mask image and a corresponding pixel of the arterial

image (subtraction by using a default mask (image 5 of the 35 serial images) was

performed to identify the peak arterial phase (maximal arterial signal). Then the

identified peak arterial phase image was used as a mask, and subtraction was performed again to identify the optimal mask among the images obtained before contrast enhancement (ie, the one with minimal background, Material and Method part,., post processing technique,) .

As to claim 2, Yoo et al teaches the method of claim 1 wherein receiving the time sequence includes receiving images having pixels represented by complex numbers (note that MR data are complex, Introduction, paragraph 3).

As to claim 3, Yoo et al teaches the method of claim 1 wherein generating the composite image includes calculating a magnitude for each pixel (the arterial phase images could be displayed as a video loop and provide equivalent or more information to the observer than would a summary image, discussion part).

As to claim 4, Yoo et al teaches the method of claim 1 further including at least one of displaying the composite image and storing the composite image(note that using the computer to generate a single composite image, discussion part).

As to claim 6, Yoo et al teaches the method of claim 1 wherein the first subset includes at least two images and wherein calculating the mask image includes calculating an average pixel as a function of corresponding pixels of the at least two images (Let the final image be s, the time series S_n, and its average $\bar{s}$,Material and Method part, Postprocessing technique , paragraph 4).

As to claim 7 and 14 , Yoo et al teaches the method of claim 1 further comprising displaying, on a computer monitor, and distinguishing at least one

image of the time sequence of magnetic resonance images (using the computer

to generate a single composite user image, discussion part, paragraph 2).

The limitation of claims 8-13 has been addressed "manually selected

mask image set (M) and arterial phase image set (A) was used to generate a

linearly filtered image, paragraph Postprocessing Techniques).

The limitation of claims 16-17 and 19 are user choice and Yoo et al

teaches a computer were all these functions can be performed by the

radiologists.

As to claim 20 and 21, Yoo et al teaches the method of claim 19 wherein

determining the introduction time includes:

calculating a quality measure for each image of the time sequence of magnetic

resonance images; and selecting the introduction time as a function of a rate of

change of the quality measure for each image relative to the time sequence

(Summary of Image Quality Comparison Results on the Five-Point Scale, table

3).

The limitation of claims 31-32,34-36,38-39 have been addressed above.

Any inquiry concerning this communication or earlier communications from

the examiner should be directed to Nancy Bitar whose telephone number is 571-

270-1041. The examiner can normally be reached on Mon-Fri (7:30a.m. to

5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the

examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The
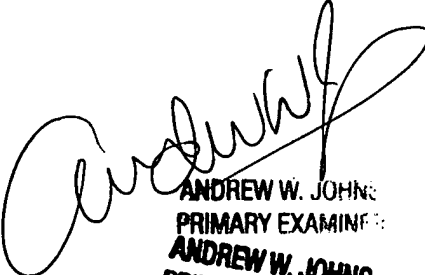
fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nancy Bitar   12/11/2007

ANDREW W. JOHN
PRIMARY EXAMINE
ANDREW W. JOHNS
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